

sample, compared with GLUTX expression in a control sample (e.g., a sample of the same tissue collected from one or more healthy individuals) indicates that the patient has a disorder associated with aberrant expression of GLUTX.

- 5 Similarly, one can diagnose a patient as having a disorder associated with aberrant activity of GLUTX by measuring GLUTX activity in a biological sample obtained from the patient. An increase or decrease in GLUTX activity in the biological sample, compared with GLUTX activity in a control
10 sample, indicates that the patient has a disorder associated with aberrant activity of GLUTX. The techniques required to measure gene expression or polypeptide activity are well known to those of ordinary skill in the art.

In addition to diagnostic methods, such as those described above, the present invention encompasses methods and compositions for typing and evaluating the prognosis of patients suffering from a disorder associated with aberrant activity or expression of GLUTX. The invention also encompasses methods and compositions for selecting an appropriate an treatment for disorders associated with inappropriate expression of GLUTX or inappropriate activity of GLUTX. The invention also includes compositions and methods for assessing the effectiveness of such treatments.

For example, the nucleic acid molecules of the invention can be used as probes to classify cells in terms of their level of GLUTX expression and as primers for diagnostic PCR analysis which can be used to detect mutations, allelic variations, and regulatory defects in the GLUTX gene.

Similarly, those of ordinary skill in the art can use routine techniques to identify inappropriate activity of GLUTX, which can be observed in a variety of forms.

Diagnostic kits for the practice of such methods are also provided.

The invention further encompasses transgenic animals that express GLUTX and recombinant "knock-out" animals that fail to express GLUTX. These animals can serve as new and useful models of disorders in which GLUTX is misexpressed.

5 The invention also features antagonists and agonists of GLUTX that can inhibit or enhance, respectively, one or more of the biological activities of GLUTX, e.g., the ability to act as a transporter for certain sugars. Suitable antagonists can include small molecules (i.e.,

10 molecules with a molecular weight below about 500), large molecules (i.e., molecules with a molecular weight above about 500), antibodies that specifically bind and "neutralize" GLUTX (as described below), and nucleic acid molecules that interfere with transcription or translation

15 of GLUTX (e.g., antisense nucleic acid molecules and ribozymes). Agonists of GLUTX also include small and large molecules, and antibodies other than neutralizing antibodies.

The invention features methods and compositions

20 useful for identifying antagonists and agonists of a GLUTX biological activity. These methods entail measuring the activity of GLUTX in the presence and absence of a test compound.

The invention also features molecules that can

25 increase or decrease the expression of GLUTX (e.g., by altering transcription or translation). Small molecules (as defined above), large molecules (as defined above), and nucleic acid molecules (e.g., antisense and ribozyme molecules) can be used to inhibit the expression of GLUTX.

30 Other types of nucleic acid molecules (e.g., molecules that bind to GLUTX negative transcriptional regulatory sequences) can be used to increase the expression of GLUTX.

Compounds that modulate the expression of GLUTX in a

cell can be identified by comparing the level of expression of GLUTX in the presence of a selected compound with the level of expression of GLUTX in the absence of that compound. A difference in the level of GLUTX expression

5 indicating that the selected compound modulates the expression of GLUTX in the cell. A comparable test for compounds that modulate the activity of GLUTX can be carried out by comparing the level of GLUTX activity in the presence and absence of the compound. Thus, the in

10 The invention features methods and compositions useful for identifying compounds which modulate GLUTX expression. These methods entail measuring the expression of GLUTX (at the transcriptional or translational level) in the presence and absence of a test compound.

15 Patients who have a disorder mediated by abnormal GLUTX activity can be treated by administration of a compound that alters the expression of GLUTX or the activity of GLUTX. When the objective is to decrease expression or activity, the compound administered can be a GLUTX antisense 20 oligonucleotide or an antibody, such as a neutralizing antibody, that specifically binds GLUTX, respectively.

The preferred methods and materials are described below in examples which are meant to illustrate, not limit, the invention. Skilled artisans will recognize methods and 25 materials that are similar or equivalent to those described herein, and that can be used in the practice or testing of the present invention.

Unless otherwise defined, all technical and scientific terms used herein have the same meaning as 30 commonly understood by one of ordinary skill in the art to which this invention belongs. Although methods and materials similar or equivalent to those described herein can be used in the practice or testing of the present